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Attorney Dock# No. 197-008-USP

Amendments to the Drawings

The attached sheet of drawings with Figure 30 has been provided to replace the previously existing Figure 30.

Attachment: Replacement Sheet – Figure 30 (1)

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REMARKS

This communication is considered fully responsive to the Office Action mailed June 3, 2005. Claims 4-7, 23-24, 31-33 and 35-43 were examined with claims 4-7, 31 and 32 standing allowed and claims 23, 24, 33, 35-40 and 43 standing rejected. Claims 23, 24, 33 and 39-43 are hereby amended. No claims are cancelled. No claims are added. Reexamination and reconsideration are respectfully requested.

Response to Amendment and Arguments

Applicant hereby acknowledges that in response to Applicant's previous Amendment and Arguments filed November 12, 2004, the Office has withdrawn the previously-presented informalities objection to the claims and the objection to the drawings. Applicant has hereby further amended claims 23 and 24 to address the objections thereto. Applicant further acknowledges the mooted of the section 102 and 103 rejections of claims 1-3, 8-22, 25-30 and 34, as well as the indication of allowability of claims 4-7.

The new objections and rejections are addressed herebelow.

Amendment Objection

The Office has objected to the amendment filed November 12, 2004, on the grounds that it allegedly introduces new matter into the disclosure. The specific objections are to the use of the " $\sqrt{6}$ " in Fig. 30 as well as to the insertion of the square root sign on page 8, lines 10 and 18; page 9, lines 5, 6, 10-14 and 17-21; page 15, lines 7-13 and page 18, lines 9-18. Also objected to are the computer implementation inserted at page 18, line 20 and the relation " $\left(B_0 - \frac{C_1}{\sqrt{6}}\right)$."

Although Applicant has amended drawing Fig. 30 (attached hereto), and adopted almost all of the Examiner's suggestions, Applicant has not entirely canceled this matter because these insertions are/were corrections of typographical errors and are not new matter. Corrections of typographical errors do not raise issues of enablement under 35 USC §112, first paragraph, nor of operability under 35 USC §101.

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To be more precise in the present case, the originally-filed application had numerous mathematical equations having numerical (as opposed to variable) coefficients which were intended to include square root signs, many of them being " $\sqrt{6}$." The original electronic document included these square root signs which were not printed or printable, presumably due to printer or printer driver error. Nevertheless, as understood by skilled mathematicians in this art, these entirely numerical coefficients are merely scaling factors which are inserted in the equations to provide normalization, i.e., the scaling factors act as normalization factors. Indeed, the mathematical equations presented here are nearly identical to those of the prior art paper cited in the specification and co-authored by one of the present inventors; namely, the paper entitled "Local radial-angular transformation of images"; M.I. Trifonov et al., Sov. J. Opt. Technol. 58(4), April 1991 (see page 2 of Applicant's specification, lines 25-28). The only difference is in the choice of the numerical coefficients. As understood by skilled mathematicians, the coefficients chosen in the 1991 article present an orthogonal representation of the LORA transform (the subject of the article and the tool used in the present invention) while the present matrix gives or was originally intended to give an orthonormal representation. Also as understood in the mathematics art, an orthogonal basis is a set of vectors that are mutually perpendicular whereas an orthonormal basis is a set of vectors that are not only mutually perpendicular but also all of length one. The difference is that the orthonormal representation is achieved by multiplying the orthogonal matrix by $1/\sqrt{6}$.

This is evident from the cited paper and corresponds to a uniform scaling of all the LORA coefficients c . This scaling does not affect the properties of coefficients, only their magnitudes. (This is also true when the real and imaginary parts of the coefficients are considered separately – see page 8 line 14 of the specification). The invention primarily depends on the properties of the coefficients, not on how they are scaled. In fact, wherever a ratio of coefficients is used in the invention (see pages 8, 9 and 15) the scaling of coefficients is entirely irrelevant. However, when coefficients are compared to non-zero thresholds (see specification page 15), scaled magnitudes are important relative to each other and to the threshold; i.e., the choice of threshold depends on how the coefficients have been scaled. As such, the thresholds are variable depending upon the selection of the scaling factor(s). Thus, the equations are not incorrect as written, they are merely scaled

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differently from the orthonormal aim. The attempt in correction of typographical errors in the application was merely to achieve the orthonormal, it was not necessary for enablement or written description. This is true also because an error-free description of the LORA transform containing all the information about scaling was already present in the application by virtue of it being included within the prior cited art; namely the Trifonov et al. article from 1991.

One of the missing square root corrections was nevertheless not returned to its original form, that being the **modulus** of a complex number (see page 9, line 18). As a matter of mathematical fact, given a complex number $z = a + bi$, then the modulus, $|z|$, is mathematically defined by $\sqrt{a^2 + b^2}$. See e.g., "Paul's Online Math Notes at <http://tutorial.math.lamar.edu/>; and Eric W. Weisstein, "Complex Modulus," from MathWorld--A Wolfram Web Resource, <http://mathworld.wolfram.com/ComplexModulus.html>. That being a matter of fact as understood by those skilled in the art, the typographical error can be corrected without question.

These objections have thus been fully obviated and/or traversed and can therefore be withdrawn. Action to this end is respectfully requested.

Claim Rejections – 35 USC §112, second paragraph

Claims 23 and 24 stand rejected as purportedly failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention.

Applicant has amended claims 23 and 24 to adopt language like that suggested by the Examiner. Thus, claims 23 and 24 are distinctively clear and compliant with section 112. The rejections under 35 USC §112 have thus been obviated and/or traversed and can be withdrawn. Action to this end is respectfully requested.

Claim Rejections – 35 USC §112, first paragraph

Claims 33, 35-40 and 43 stand rejected as purportedly failing to comply with the written description requirement. The specific objection to claim 33 is that the relation $\left(B_0 - \frac{c}{\sqrt{6}}\right)$ was not supported by the original disclosure. The specific objection to claims 35-40 and 43 is that these are drawn to computer-readable mediums having computer-

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executable instructions and that only the original claim 1 had found support in the specification for such mediums and instructions.

First, as to claim 33, as well as for the similar relation in claim 43, these claims have been amended hereby to remove the reference to the " $\sqrt{6}$ "; so this particular objection is hereby obviated. Note, here as above, the " $\sqrt{6}$ " was used as a scaling factor and scaling factors of various magnitudes may be used within, and be understood by the skilled artisan as teaching possession of the invention.

Next, as to assertion that the computer-readable mediums having computer-executable instructions have support only for the original claim 1 (via original claim 34), Applicant respectfully notes that current claims-here-in-interest, claims 35-40, are narrower in scope than original claim 1 (claims 35-40 having specifically incorporated the subject matter thereof therein). And, since the broad category of multiple embodiments embraced by the subject matter of claim 1 (and claim 34) has been fully supported by the specification as-filed, so too have all the narrower embodiments which are fully included therewithin. A sufficient written description of the broad group of embodiments includes the narrower implementations as well. Thus, as subsets of the original claim 1 (and claim 34), these claims 35-40 were then also supported by the specification as-filed in the very same manner as was the subject matter of claim 1 (and claim 34). A skilled artisan would appreciate herefrom the Applicant's possession of the invention.

More importantly however, a determination as to whether a specification has sufficient "support" for the subject matter of the claims is to be made by the hypothetical person of ordinary skill in the art; i.e., would the person of ordinary skill in the art, upon reading the specification, be enabled to make and use the invention without undue experimentation? In the present case, concerning the issue of computer implementations in digital image processing, particularly of computer-readable mediums with computer-executable instructions, the answer is an undeniable yes. First, it should be noted that the field is digital image processing as set forth in Applicant's specification in the Background section (particularly, page 1, line 11). Indisputably, this field has very consistently used computers in the processing of the data for digital images. Moreover, the prior art references cited by the Examiner support this; see Ghosal et al., page 415, second column, sub-heading 3 entitled "Implementations"; and see Kim et al. US Patent No. 6,754,667,

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claims 59-61 ("[a] computer readable medium having instructions for executing a method"), *inter alia*. As a result, the person of ordinary skill in this art would not have questioned the Applicant's possession of the invention of claims 35-43. See: MPEP 2163 which explains that "[p]atents and printed publications in the art should be relied upon to determine whether an art is mature and what the level of knowledge and skill is in the art. See, e.g., *In re Hayes Microcomputer Products, Inc. Patent Litigation*, 982 F.2d 1527, 1534-35, 25 USPQ2d 1241, 1246 (Fed. Cir. 1992). Also from MPEP 2163;

What is conventional or well known to one of ordinary skill in the art need not be disclosed in detail. See *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986). If a skilled artisan would have understood the inventor to be in possession of the claimed invention at the time of filing, even if every nuance of the claims is not explicitly described in the specification, then the adequate description requirement is met. See, e.g., *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563, 19 USPQ2d 1111, 1116 (Fed. Cir. 1991); *Martin v. Johnson*, 454 F.2d 746, 751, 172 USPQ 391, 395 (CCPA 1972) (stating "the description need not be in *ipsis verbis* [i.e., "in the same words"] to be sufficient").

Lastly, a *prima facie* case of a lack of a written description was not properly made here. As set forth in MPEP 2163;

the Examiner must "[e]stablish a *prima facie* case by providing reasons why a person skilled in the art at the time the application was filed would not have recognized that the inventor was in possession of the invention as claimed in view of the disclosure of the application as filed. A general allegation of "unpredictability in the art" is not a sufficient reason to support a rejection for lack of adequate written description.

This was not done here. In the present case, only a notation of what was not explicit in the specification was set forth. There was no discussion about why a skilled artisan would not have recognized possession. Therefore, a *prima facie* rejection under 35 USC 112, first paragraph, was not properly made and the rejection thus must be withdrawn. Action to this end is respectfully requested.

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Duplicate Claims

Claims 41 and 42 were objected to under 37 CFR 1.75 as being substantial duplicates of claims 31 and 32.

Applicant has hereby amended claims 41 and 42 so that these are no longer substantial duplicates of claims 31 and 32. Now that the basis for this objection has been eliminated, these claims 41 and 42 are now also in condition for allowance. Action to this end is respectfully requested.

Subject Matter Not Found in the Prior Art

Applicant notes with approval the Examiner's finding that the subject matter of claims 33, 35-40 and 43 has not been found in the prior art. Applicant further notes that in view of the discussion of 35 U.S.C. 112, first paragraph, above, there is no longer any basis for objection to these claims. As above, Applicant respectfully requests withdrawal of the section 112, first paragraph rejections and consequent allowance of these claims 33, 35-40 and 43.

Allowable Subject Matter

Applicant notes with approval the allowance of claims 4-7 and 31-32. Movement of these claims to issuance is respectfully requested.

Applicant further notes with approval the allowability of claims 23 and 24, and inasmuch as these claims 23 and 24 have been amended to overcome the rejection under 35 USC 112, second paragraph, allowance and subsequent issuance of these claims 23 and 24 is respectfully requested.

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Conclusion

The Applicant respectfully requests prompt issuance of a notice of allowance for the remaining claims 4-7, 23, 24, 31-33, 35-43 in this matter.

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Respectfully submitted,



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